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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/067,703	02/05/2002	Enio L. Carpi	01 P 14623 US (8055-113)	7170

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EXAMINER

MOHAMEDULLA, SALEHA R

ART UNIT	PAPER NUMBER
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1756

DATE MAILED: 04/09/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No. 10/067,703	Applicant(s) CARPI ET AL.	
	Examiner Saleha R. Mohamedulla	Art Unit 1756	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
 - If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
 - If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
 - Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 11 March 2004.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-13 is/are pending in the application.
- 4a) Of the above claim(s) 1-4 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 5-13 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☒ Claim(s) 1-13 are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

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DETAILED ACTION

Claims 1-13 are pending. Claims 1-4 are withdrawn from consideration and claims 5-13 are examined.

Election/Restriction

1. The traverse of the restriction requirement in the remarks of the response has been carefully considered but is not deemed to be persuasive for the reasons of record as set forth the last Office action in combination with the following remarks.

Applicant argues that the examination of the application could be made without serious burden even though the application contains claims to independent and distinct inventions. However, the inventions as claimed are clearly distinct and capable of supporting separate patents within the meaning of 35 U.S.C. 121. The inventions need not be independent in order to have a proper restriction requirement (see M.P.E.P. 802.01). One-way distinctness is all that is necessary in a restriction between inventions which are related as a product and process of using that product (see M.P.E.P. 806.05(h)). Clearly to examine both product and process claims would require a divergent field of search and consideration of product embodiments for process inventions and process embodiments for the product invention requiring an undue burdensome search and examination.

Therefore, the restriction requirement is still proper and made FINAL.

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Claim Rejections - 35 USC § 102

2. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

3. Claims 5, 6, 8, 9, 10 and 13 are rejected under 35 U.S.C. 102(e) as being anticipated by US# 6,395,432 to Rolfson.

Rolfson teaches process alignment in making a 180 degree phase shift alignment region. The alignment part of the mask includes the phase shift alignment region and an adjacent alignment feature edge (Abstract). Rolfson teaches use of ultraviolet light as the exposure light (col. 1, line 18). Ultraviolet light is defined by the range 150 to 450 nm wavelength. Rolfson teaches a substrate made of transparent (quartz) material and an attenuating material made of chromium. A photoresist is formed over the materials and patterned to form circuitry patterns and a non-circuitry alignment feature (col. 3, lines 50-60). In Figures 6 and 8, Rolfson shows the phase shift alignment region 36 and the alignment feature 20. The region 36 is etched into the substrate.

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4. Claims 5, 8, 9 and 13 are rejected under 35 U.S.C. 102(b) as being anticipated by US# 6,042,972 to Schulze.

Schulze teaches a 180 degree phase shifting alignment region 102 having a plurality of transparent regions and a plurality of transparent phase shifting regions (Abstract). The mask includes attenuating material made of chrome and it is inherent that a resist is used (col. 1, lines 15-30). Patterns of the transparent phase shifting regions are formed by etching into the underlying upper surfaces of the quartz substrate to form recesses as shown in Figures 2, 2A and 2B (col. 1, lines 50-60).

Claim Rejections - 35 USC § 103

5. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

6. Claims 7, 11 and 12 are rejected under 35 U.S.C. 103(a) as being unpatentable over US# 6,395,432 to Rolfson.

Rolfson teaches the limitations discussed above. Rolfson teaches use of ultraviolet light as the exposure light (col. 1, line 18) and a 180 degree phase shift (col. 2, lines 20-25). Rolfson does not specifically teach a 193 nm wavelength for the light and a 48 nm depth in the substrate. 193 nm is included in the ultraviolet range for light and a 48 nm depth in the substrate produces a 180 degree phase shift. It would be obvious to one of ordinary skill in the art to

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use 193 nm light and etch to a 48 nm depth as Rolfson teaches ultraviolet light and a 180 degree phase shift.

7. Claims 6, 7, 10, 11 and 12 are rejected under 35 U.S.C. 103(a) as being unpatentable over US# 6,042,972 to Schulze.

Schulze teaches the limitations discussed above. Schulze teaches a 180 degree phase shift (col. 1, line 26). Schulze also teaches forming patterns on a semiconductor wafer (col. 1, lines 30-35). Semiconductor patterning is performed using light in the ultraviolet range. Ultraviolet light occurs in the 150 to 450 nm wavelength range. Schulze does not specifically teach a 193 nm wavelength in a 150 to 450 nm range for the exposure light and a 48 nm depth in the substrate. 193 nm is included in the ultraviolet wavelength range and a 48 nm depth in the substrate produces a 180 degree phase shift. It would be obvious to one of ordinary skill in the art to use 193 nm light and etch to a 48 nm depth as Schulze teaches semiconductor patterning and a 180 degree phase shift.

Conclusion

8. Any inquiry concerning this communication or earlier communications from the Examiner should be directed to Saleha Mohamedulla whose telephone number is (571) 272-1387. The Examiner can normally be reached Monday-Friday, from 8:00 AM to 4:30 PM.

If attempts to reach the Examiner by telephone are unsuccessful, the Examiner's supervisor, Mark Huff, can be reached on (571) 272-1385. The fax phone number for the organization where this application or proceeding is assigned is (703) 872-9306.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



Saleha R. Mohamedulla
Patent Examiner
Technology Center 1700
April 1, 2004